

WE CLAIM:

1. A spindle motor for use in a disk drive having a rotatable head stack assembly, the spindle motor comprising:

a spindle motor hub;

a magnet radially attached about the spindle motor hub; and

a spindle motor stator including:

a stator rim; and

a plurality of stator teeth arrayed about and internally extending from the stator rim, the stator teeth being sized to fit about the magnet in operable communication therewith for rotating the spindle motor hub, the stator teeth having laminate layers, the stator teeth having at least one reduced height stator tooth, the reduced height stator tooth having fewer laminate layers than a remainder of the stator teeth, the reduced height stator tooth being positionable adjacent the head stack assembly for allowing the head stack assembly to pivot over the reduced height stator tooth.

1 2. The spindle motor of Claim 1 wherein the reduced height stator tooth has a width greater
2 than a remainder of the stator teeth.

1 3. The spindle motor of Claim 1 wherein the reduced height stator tooth has a tooth body
2 portion and a distal shoe extending from the tooth body portion, the shoe is disposed adjacent the
3 magnet.

1 4. The spindle motor of Claim 3 wherein the distal shoe extends vertically beyond the tooth
2 body portion.

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7 at least one stator tooth extending from the stator rim, the stator tooth being

8 sized to fit about the magnet in operable communication therewith for rotating the

9 spindle motor hub, the stator tooth having a tooth body portion attached to the stator

10 rim and a distal shoe adjacent the magnet, the distal shoe extends vertically beyond

11 the tooth body portion, the stator tooth being positionable adjacent the head stack

12 assembly for allowing the head stack assembly to pivot over the stator tooth.
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6. A spindle motor for use in a disk drive having a rotatable head stack assembly, the spindle motor comprising:

a spindle motor hub;

a magnet radially attached about the spindle motor hub; and

a spindle motor stator including:

a stator rim formed of at least two vertically stacked stator rim laminate layers;

a plurality of stator teeth arrayed about and internally extending from the stator rim, the stator teeth being sized to fit about the magnet in operable communication therewith for rotating the spindle motor hub, the stator teeth each being formed of at least two stator tooth laminate layers, the stator tooth laminate layers being respectively attached to the stator rim laminate layers; and

at least one reduced height stator tooth having at least two reduced height stator tooth laminate layers horizontally off-set from and vertically formed towards each other, the reduced height stator tooth being positionable adjacent the head stack assembly for allowing the head stack assembly to pivot over the reduced height stator tooth.

1 7. The spindle motor of Claim 6 wherein the at least two reduced height stator tooth
2 laminate layers include an upper laminate layer and a lower laminate layer, the upper and lower
3 laminate layers are horizontally off-set from each other.

1 8. The spindle motor of Claim 6 wherein the at least one reduced height stator tooth
2 laminate layers include an upper laminate layer, a lower laminate layer, and an inner laminate
3 layer between the upper and lower laminate layers, the upper and lower laminate layers are
4 horizontally off-set from the inner laminate layer.

1 9. The spindle motor of Claim 6 wherein the at least two reduced height stator tooth
2 laminate layers include an upper laminate layer and a lower laminate layer, the lower laminate
3 layer extends horizontally from the stator rim, the upper laminate layer is formed towards the
4 lower laminate layer.

10. A spindle motor for use in a disk drive having a rotatable head stack assembly, the spindle motor comprising:

a spindle motor hub;

a magnet radially attached about the spindle motor hub; and

a spindle motor stator including:

a stator rim formed of at least two vertically stacked stator rim laminate layers;

at least one stator tooth internally extending from the stator rim, the stator tooth being sized to fit about the magnet in operable communication therewith for rotating the spindle motor hub, the stator tooth being formed of at least two stator tooth laminate layers horizontally off-set from and vertically formed towards each other, the stator tooth laminate layers being respectively attached to the stator rim laminate layers, the stator tooth being positionable adjacent the head stack assembly for allowing the head stack assembly to pivot over the stator tooth.

1 11. The spindle motor of Claim 10 wherein the stator tooth laminate layers include an upper
2 laminate layer and a lower laminate layer, the upper and lower laminate layers are horizontally
3 off-set from each other.

1 12. The spindle motor of Claim 10 wherein the stator tooth laminate layers include an upper
2 laminate layer, a lower laminate layer, and an inner laminate layer between the upper and lower
3 laminate layers, the upper and lower laminate layers are horizontally off-set from the inner
4 laminate layer.

1 13. The spindle motor of Claim 10 wherein the stator tooth laminate layers include an upper
2 laminate layer and a lower laminate layer, the lower laminate layer extends horizontally from the
3 stator rim, the upper laminate layer is formed towards the lower laminate layer.

1 14. A spindle motor for use in a disk drive having a rotatable head stack assembly, the spindle
2 motor comprising:

3 a spindle motor hub;

4 a magnet radially attached about the spindle motor hub; and

5 a spindle motor stator including:

6 a stator rim; and

7 a plurality of stator teeth arrayed about and internally extending from the
8 stator rim, the stator teeth being sized to fit about the magnet in operable
9 communication therewith for rotating the spindle motor hub, the stator teeth having
10 laminate layers formed to a first thickness, the stator teeth having at least one
11 reduced height stator tooth, the reduced height stator tooth having laminate layers
12 formed to a second thickness less than the first thickness, the reduced height stator
13 tooth being positionable adjacent the head stack assembly for allowing the head
14 stack assembly to pivot over the reduced height stator tooth.

- 1 15. The spindle motor of Claim 14 wherein the reduced height stator tooth has a width
2 greater than a remainder of the stator teeth.

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1 16. A disk drive comprising:
2 a disk drive base;
3 a head stack assembly rotatably attached to the disk drive base; and
4 a spindle motor attached to the disk drive base including:
5 a spindle motor hub;
6 a magnet radially attached about the spindle motor hub; and
7 a spindle motor stator including:
8 a stator rim; and
9 a plurality of stator teeth arrayed about and internally extending from
10 the stator rim, the stator teeth being sized to fit about the magnet in operable
11 communication therewith for rotating the spindle motor hub, the stator teeth
12 having laminate layers, the stator teeth having at least one reduced height
13 stator tooth, the reduced height stator tooth having fewer laminate layers
14 than a remainder of the stator teeth, the reduced height stator tooth being
15 positionable adjacent the head stack assembly for allowing the head stack
16 assembly to pivot over the reduced height stator tooth.

1

1 17. The disk drive of Claim 16 wherein the reduced height stator tooth has a width greater than
2 a remainder of the stator teeth.

1 18. The disk drive of Claim 16 wherein the reduced height stator tooth has a tooth body
2 portion and a distal shoe extending from the tooth body portion, the shoe is disposed adjacent the
3 magnet.

1 19. The disk drive of Claim 18 wherein the distal shoe extends vertically beyond the tooth body
2 portion.

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20. A disk drive comprising:

a disk drive base;

a head stack assembly rotatably attached to the disk drive base; and

a spindle motor attached to the disk drive base including:

a spindle motor hub;

a magnet radially attached about the spindle motor hub; and

a spindle motor stator including:

a stator rim; and

at least one stator tooth extending from the stator rim, the stator tooth being sized to fit about the magnet in operable communication therewith for rotating the spindle motor hub, the stator tooth having a tooth body portion attached to the stator rim and a distal shoe adjacent the magnet, the distal shoe extends vertically beyond the tooth body portion, the stator tooth being positionable adjacent the head stack assembly for allowing the head stack assembly to pivot over the stator tooth.

21. A disk drive comprising:

a disk drive base;

a head stack assembly rotatably attached to the disk drive base; and

a spindle motor attached to the disk drive base including:

a spindle motor hub;

a magnet radially attached about the spindle motor hub; and

a spindle motor stator including:

a stator rim formed of at least two vertically stacked stator rim
laminate layers;

a plurality of stator teeth arrayed about and internally extending from
the stator rim, the stator teeth being sized to fit about the magnet in operable
communication therewith for rotating the spindle motor hub, the stator teeth
each being formed of at least two stator tooth laminate layers, the stator
tooth laminate layers being respectively attached to the stator rim laminate
layers; and

at least one reduced height stator tooth having at least two reduced
height stator tooth laminate layers horizontally off-set from and vertically
formed towards each other, the reduced height stator tooth being
positionable adjacent the head stack assembly for allowing the head stack
assembly to pivot over the reduced height stator tooth.

22. The disk drive of Claim 21 wherein the at least two reduced height stator tooth laminate layers include an upper laminate layer and a lower laminate layer, the upper and lower laminate layers are horizontally off-set from each other.

23. The disk drive of Claim 21 wherein the at least one reduced height stator tooth laminate layers include an upper laminate layer, a lower laminate layer, and an inner laminate layer between the upper and lower laminate layers, the upper and lower laminate layers are horizontally off-set from the inner laminate layer.

24. The disk drive of Claim 21 wherein the at least two reduced height stator tooth laminate layers include an upper laminate layer and a lower laminate layer, the lower laminate layer extends horizontally from the stator rim, the upper laminate layer is formed towards the lower laminate layer.

25. A disk drive comprising:

a disk drive base;

a head stack assembly rotatably attached to the disk drive base; and

a spindle motor attached to the disk drive base including:

a spindle motor hub;

a magnet radially attached about the spindle motor hub; and

a spindle motor stator including:

a stator rim formed of at least two vertically stacked stator rim
laminate layers;

at least one stator tooth internally extending from the stator rim, the
stator tooth being sized to fit about the magnet in operable communication
therewith for rotating the spindle motor hub, the stator tooth being formed of
at least two stator tooth laminate layers horizontally off-set from and
vertically formed towards each other, the stator tooth laminate layers being
respectively attached to the stator rim laminate layers, the stator tooth being
positionable adjacent the head stack assembly for allowing the head stack
assembly to pivot over the stator tooth.

1 26. The disk drive of Claim 25 wherein the stator tooth laminate layers include an upper
2 laminate layer and a lower laminate layer, the upper and lower laminate layers are horizontally
3 off-set from each other.

1 27. The disk drive of Claim 25 wherein the stator tooth laminate layers include an upper
2 laminate layer, a lower laminate layer, and an inner laminate layer between the upper and lower
3 laminate layers, the upper and lower laminate layers are horizontally off-set from the inner
4 laminate layer.

1 28. The disk drive of Claim 25 wherein the stator tooth laminate layers include an upper
2 laminate layer and a lower laminate layer, the lower laminate layer extends horizontally from the
3 stator rim, the upper laminate layer is formed towards the lower laminate layer.

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29. A disk drive comprising:

a disk drive base;

a head stack assembly rotatably attached to the disk drive base; and

a spindle motor attached to the disk drive base including:

a spindle motor hub;

a magnet radially attached about the spindle motor hub; and

a spindle motor stator including:

a stator rim; and

a plurality of stator teeth arrayed about and internally extending from the stator rim, the stator teeth being sized to fit about the magnet in operable communication therewith for rotating the spindle motor hub, the stator teeth having laminate layers formed to a first thickness, the stator teeth having at least one reduced height stator tooth, the reduced height stator tooth having laminate layers formed to a second thickness less than the first thickness, the reduced height stator tooth being positionable adjacent the head stack assembly for allowing the head stack assembly to pivot over the reduced height stator tooth.

1 30. The disk drive of Claim 29 wherein the reduced height stator tooth has a width greater
2 than a remainder of the stator teeth.

1